Claims

What is claimed is:

1. A method of designing a machine component, comprising:

establishing a plurality of requirements associated with the machine component;

automatically establishing a component layout in response to the plurality of requirements;

analyzing the component layout to determine whether the component layout meets a predetermined performance threshold; and

establishing a final component design when the component layout meets the predetermined performance threshold.

2. The method of claim 1, further including modifying the component layout when the component layout does not meet the predetermined performance threshold.

3. The method of claim 1, further including:

comparing the component layout with a set of information related to existing machine components; and

identifying an existing machine component having a similar layout to component layout.

4. The method of claim 1, wherein the analysis of the component layout analysis includes a finite element analysis.

5. The method of claim 1, wherein the predetermined performance threshold includes a minimum component life expectancy.

6. The method of claim 1, wherein machine component is a fluid cylinder and the plurality of requirements includes at least one of a bore diameter, a rod diameter, a stroke length, a head end pin diameter, a rod end pin diameter, a head end port type, a head end port size, a head end port orientation, a rod end port type, a rod end port size, and a rod end port orientation.

7. The method of claim 1, further including archiving the final component design in a part database.

8. The method of claim 7, further including reviewing a previously stored final component design.

9. The method of claim 1, further including determining the costs associated with the final component design.

10. The method of claim 9, further including identifying design changes to reduce the costs associated with final component design.

11. A system for designing a machine component, comprising:

an input device adapted to receive a plurality of requirements associated with a machine component; and

a processor adapted to establish a component layout in response to the plurality of requirements, to analyze the component layout to determine whether the component layout meets a predetermined performance threshold, and to establish a final component design when the component layout meets the predetermined performance threshold.

12. The system of claim 11, further including a storage device adapted to store a set of information related to a plurality of existing machine components.

13. The system of claim 11, wherein the processor is adapted to perform a finite element analysis on the component layout.

14. The system of claim 11, wherein the input device includes an electronic design requirements form including input fields adapted to receive the plurality of requirements.

15. The system of claim 14, wherein machine component is a fluid cylinder and the plurality of requirements includes at least one of a bore diameter, a rod diameter, a stroke length, a head end pin diameter, a rod end pin diameter, a head end port type, a head end port size, a head end port orientation, a rod end port type, a rod end port size, and a rod end port orientation.

16. The system of claim 11, wherein the processor is adapted to determine the costs associated with the final component design and to identify design changes to reduce the costs associated with the final component design.

17. A method of designing a machine component, comprising:

establishing a plurality of requirements associated with the machine component;

comparing the plurality of requirements with a set of information related to existing machine components in an automated manner; and

establishing a component layout design in response to said comparison.

18. The method of claim 17, further including identifying an existing machine component having a layout including at least one of the plurality of requirements.

19. The method of claim 17, further including:

analyzing the component layout to determine whether the component layout meets a predetermined performance threshold; and

establishing a final component design when the component layout meets the predetermined performance threshold.

20. The method of claim 19, further including modifying the component layout when the component layout does not meet the predetermined performance threshold.

21. The method of claim 19, further including archiving the final component design in a part database.

22. The method of claim 17, wherein the machine component is a fluid cylinder and the plurality of requirements includes at least one of a bore diameter, a rod diameter, a stroke length, a head end pin diameter, a rod end pin diameter, a head end port type, a head end port size, a head end port orientation, a rod end port type, a rod end port size, and a rod end port orientation.

23. The method of claim 17, further including determining the costs associated with the final component design.

24. The method of claim 23, further including identifying design changes to reduce the costs associated with final component design.

25. A system for designing a machine component, comprising:

an input device adapted to receive a plurality of requirements associated with a machine component; and

a processor adapted to establish a component layout in response to the plurality of requirements, to compare the component layout with a set of information related to existing machine components, and to identify an existing machine component having a layout similar to the established component layout.

26. The system of claim 25, wherein the processor is adapted to analyze the component layout to determine whether the component layout

meets a predetermined performance threshold and to establish a final component design when the component layout meets the predetermined performance threshold.

27. The system of claim 25, further including a storage device adapted to store a set of information related to a plurality of existing machine components.

28. A method of designing a machine component, comprising:

establishing a plurality of requirements associated with the machine component;

establishing a component layout in response to the plurality of requirements;

determining the costs associated with the component layout; and

identifying changes in the component layout to reduce the costs associated with the component layout.

29. The method of claim 28, further including:

comparing the component layout with a set of information related to existing machine components; and

identifying an existing machine component having a layout similar to the established component layout.

30. The method of claim 28, further including:

analyzing the component layout to determine whether the component layout meets a predetermined performance threshold; and

establishing a final component design when the component layout meets the predetermined performance threshold.

31. The method of claim 30, further including modifying the component layout when the component layout does not meet the predetermined performance threshold.

32. The method of claim 28, further including archiving the final component design in a part database.

33. A system for designing a machine component, comprising:

an input device adapted to receive a plurality of requirements associated with a machine component; and

a processor adapted to establish a component layout in response to the plurality of requirements, to determine the costs associated with the component layout, and to identify changes in the component layout to reduce the costs associated with the component layout.

34. The system of claim 33, further including a storage device adapted to store a set of information related to a plurality of existing machine components.

35. The system of claim 34, wherein the processor is adapted to compare the component layout with the set of information related to existing machine components and to identify an existing machine component having a layout similar to the component layout.

36. The system of claim 33, wherein the processor is adapted to analyze the component layout to determine whether the component layout meets a predetermined performance threshold and to establish a final component design when the component layout meets the predetermined performance threshold.